DOCUMENT RESUME

ED 040 469 CG 005 504

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TITLE	Use of Non-Professional Personnel for Health Screening of Head Start Children.
INSTITUTION	American Orthopsychiatric Association, New York, N.Y.; Hawaii Univ., Honolulu. School of Public Health.
PUB DATE	Mar 70
NOTE	30p.; Paper presented at the American Orthopsychiatric Association Convention, San Francisco, California, March 23-26, 1970
EDRS PRICE	EDRS Price MF-$0.25 HC-$1.60
DESCRIPTORS	Child Care, Educational Programs, *Health Personnel, *Health Services, *Nonprofessional Personnel, Nurses, *Pediatrics Training, Psychologists, *Supervision

ABSTRACT

This study investigates the extent to which trained nonprofessional personnel under nursing supervision can effectively conduct health screening of Head Start children. Results of screening by nonprofessional workers are compared with results of the traditional pediatric examinations given each child. A total of four nonprofessional persons selected from the indigenous population, trained by a pediatrician and a psychologist, used the following instruments to facilitate screening: (1) parent interview and physical observation forms prepared by the authors; (2) a revision of the Denver Developmental Screening Test; and (3) the Ammons Quick Test. There was a positive correlation between the results of pediatric examinations and those of aides' screening. Aides' referrals for intellectual and developmental problems also reflected a low but positive correlation with those of psychologists. Results suggest that with little training, aides can be useful in doing health screening under supervision by a nurse, and may thus serve to assist in areas where there is an acute shortage of medical and nursing personnel. A behavior inventory used in the study is included separately. (KJ)

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USE OF NON-PROFESSIONAL PERSONNEL FOR HEALTH SCREENING OF HEAD START CHILDREN

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Because of our increasing concern about the manpower shortage,[1,5,7,8,9,10,11,17] this study was conducted in 1967 in an effort to investigate the extent to which non-professional personnel could effectively do health screening of Head Start children for detection of physical, developmental, and intellectual problems. Emphasis is on screening[4] or identification of possible physical or emotional problems in healthy persons and not on diagnosis.

Health examinations of Head Start children in Hawaii are the responsibility of the Department of Health, Child Health Services Division (presently done under contract with Children's Hospital). The practice is to employ pediatricians on a "fee for service" basis for pediatric examinations; speech and hearing specialists for hearing screening, and optometrists for vision screening. Routine laboratory procedures for blood, urine and tuberculin tests are also included.

Presented at the 1970 annual meeting of the American Orthopsychiatric Association, San Francisco, California.

The research reported herein was performed pursuant to a contract (#OE04121) with the Office of Economic Opportunity, Executive Office of the President, Washington, D. C. 20506.

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The study was designed to examine the same Head Start children with specific tools for physical and developmental screening. Results were compared with those obtained from pediatric examinations. No effort was made to compare these results with those of other examinations performed.

Besides the authors, the study staff was composed of a nurse supervisor, a graduate student in psychology, and four aides from the eligible population who were mothers with less than a high school education. These aides were recommended, after having served as social work aides for about six months, by the director of the Community Action Program of the Office of Economic Opportunity. Ages ranged from 25 to 45 years.

The major hypothesis was that findings of screening procedures applied by trained non-professionals would correlate positively with findings from examinations given by pediatricians. Two additional hypotheses were postulated: (1) with additional specific tools used by the aides, screening of children for intellectual and learning problems may be more effective than the present method which relies solely on the judgements of pediatricians conducting examinations, and (2) taking into consideration the additional expense of pediatric and psychological training and of nurse supervision, the cost for screening should still be substantially less with use of non-professional personnel than the cost of pediatricians and nurses now doing screening.

METHOD

SAMPLE

The subjects were 298 Head Start children from ten pre-schools on the Island of Oahu, Hawaii. Ages were three to four and a half, the majority of whom were between four and four and a half years of age. All screening examinations by the aides were scheduled prior to the pediatric examinations. The purpose of this was to reduce any possibility that mothers might give information to the aides as a result of having conferred with the physician or nurse.

INSTRUMENTS

The following screening tools were used: (1) a parent interview form that consisted of questions relating to the child's medical and behavioral history, (2) a physical observation form (both of these were developed by the authors), (3) the Denver Developmental Screening Tests (DST)[6] revised and simplified according to half-year age levels, and (4) Quick Test (QT) Form 1.[2,3]

TRAINING OF AIDES

The authors were in charge of training. For a period of two weeks, three hours each day was allotted for this purpose. Each form was first discussed and demonstrated. The aides then had practice sessions using each other to gain familiarity with the parent interview forms. For the other forms they had practice sessions observing and screening children. The aides also had an opportunity to observe children at the Department of Health's Intensive Treatment Center for Retarded and Multiple Handicapped Children, where they could observe specific handicaps.

PROCEDURE

Arrangements for aides to meet with parents were carefully coordinated with the Head Start program administrator and neighborhood Community Action Program coordinators. Letters were sent to mothers of Head Start children in advance by CAP directors. Principals and teachers were also notified in advance and dates for examinations agreed upon.

Parents were interviewed at home for about 45 to 60 minutes. The screening of children at the school took from 20 to 30 minutes per child. All completed forms were scrutinized by the nurse-supervisor for missing data or for questionable responses. During the early period of screening, the nurse-supervisor also had individual conferences with the aides in order to check their forms and to request that they re-do those about which there was some question.

The nurse-supervisor tabulated all of the problems, or potential problems, recorded by the aides from the family history and from the observation forms. She also recorded results from the pediatric examination for each child. Using the pediatric examination results as criteria, the pediatrician on the study made judgements as to under- and over-referrals by the aides.

The nurse-supervisor also compiled the results of the Developmental Screening Test and Quick Test. Those below and above a certain score on each were then referred for additional psychological testing. The psychologists administered the Stanford-Binet to fifty of the children who scored in the lowest 20% on both the DST and Quick Test and another fifty who scored above the 20th percentile on each test. The children to be tested by the psychologists were randomly selected from two groups (above and

below the 20th percentile) and were tested without knowledge on the part of the psychologists as to the DST and Quick Test scores or as to the group in which they belonged.

RESULTS

Table 1 presents a comparison of aides' and pediatricians' identifications of medical problems. For this purpose the phi coefficient was used as a measure of the relationship between the judgements of aides and pediatricians. The relationship is positive (.56) and significantly different from zero as indicated by a chi-squared test. The categories of over- and under-referrals by the aides are listed in Table 2.

Table 1

COMPARISON OF REFERRALS BY AIDES AND BY PEDIATRICIANS

		Pediatrician	
		Referral	Non-Referral
Aides	Non-Referral	26	168
	Referral	70	34

ϕ = .56

X^2 = 93.45

Table 2

TYPES OF DISORDERS AIDES OVER- AND UNDER-REFERRED

Under-referrals		Over-referrals**	
Cardiac	5	Cardiac	2
*Orthopedic	7	*Orthopedic	11
Hernia	4	Seizures	1
Seizures	1	Ear, Nose, Throat	6
Ear, Nose, Throat	1	Weight	7
Skin	3	Worms	3
Weight	1	Allergy	4
Worms	1		
Gastro-Urinary	1		
Bronchitis	1		
Rhinitis	1		
Total	26		34

* Includes knock-kneed, pigeon-toed, flat feet, awkward gait

** Grouped according to most severe disorder (some Ss were over-referred on more than one disorder)

Tables 3 and 4 present comparisons of referrals made by aides using the DST and QT with those of the psychologists using the Stanford-Binet, Form L-M (S-B) for the two ages combined. These comparisons are based only on those children randomly

selected for psychological testing, who were seen by both aides and psychologist. Children whose scores the aides found to be below the 20th percentile on the DST and QT were compared with children scoring below IQ 80 on the S-B. Results indicate that the scores obtained by the aides on the DST had a statistically significant but low positive correlation with IQ scores obtained by psychologists. The QT scores also correlate positively with IQ scores, but the relation is not significantly different from zero.

Table 3

COMPARISON OF PSYCHOLOGISTS' STANFORD-BINET RESULTS WITH AIDES' REFERRALS FROM DST FOR 4 AND 4½ YEAR OLDS

		Psychologist	
		Referral	Non-Referral
Aides	Non-Referral	14	50
	Referral	17	16

$\phi = .30$

$X^2 = 8.73$

Table 4

COMPARISON OF PSYCHOLOGISTS' STANFORD-BINET RESULTS AND AIDES' REFERRALS FROM QT FOR 4 AND 4½ YEAR OLDS

		Psychologist	
		Referral	Non-Referral
Aides	Non-Referral	20	44
	Referral	15	18

$\phi = .14$

$X^2 = 1.90$

Tables 5 and 6 present comparisons of the pediatricians' referrals for intellectual problems with those of the aides and psychologist. The low correlations obtained indicate that the relation is not significantly different from zero. The small (3%) number of referrals by pediatricians would seem to suggest that in this situation they tend to pay less attention to identification of intellectual problems than they do to physical problems.

Table 5

COMPARISON OF PSYCHOLOGISTS' AND PEDIATRICIANS' REFERRALS FOR INTELLECTUAL PROBLEMS

		Psychologist	
		Referral	Non-Referral
Pediatrician	Non-Referral	29	62
	Referral	3	3

$\phi = .09$

$X^2 = .79$

Table 6

COMPARISON OF AIDES' AND PEDIATRICIANS' REFERRALS FOR INTELLECTUAL AND DEVELOPMENTAL PROBLEMS

		Aides	
		Referral	Non-Referral
Pediatrician	Non-Referral	26	63
	Referral	6	2

$\phi = .27$

$X^2 = 7.07$

Pearson correlation coefficients among age, sex, and scores on DST, QT, the Peabody Picture Vocabulary Test (obtained from the University of Hawaii Evaluation and Research Center) and S-B are presented in Table 7. No significant differences are found between the sexes. The DST scores correlate significantly though not highly with the scores on the Quick Test and the Stanford-Binet; the latter correlates highest (.62) with the Peabody. The correlation between the QT and Peabody, although relatively low (.25), is significantly different from zero.

Table 7

CORRELATIONS AMONG AGE, SEX, QT, DST, PEABODY, AND S-B

	Age (Months)	Sex	Developmental Screening Test	Quick Test	Peabody
Sex	.03 (296)				
Developmental Screening Test	.25 (301)	-.03 (298)			
Quick Test	.31*** (298)	.09 (286)	.39*** (298)		
Peabody	-.07 (76)	.19 (73)	.17 (75)	.45*** (75)	
Stanford-Binet	-.20* (100)	-.14 (94)	.30** (100)	.25* (99)	.62*** (33)

Numbers in parentheses indicate N's upon which r's were based.

* $p < .05$

** $p < .01$

*** $p < .001$

The third hypothesis is related to the cost of using aides to do screening. Included in the costs would be that of training and supervision, which involved the salaries of the pediatrician and psychologist for two weeks, three hours a day, and the salaries of the nursing supervisor and aides. These were compared with the expenditures of pediatricians employed on a "fee for service" basis of $10.00 per child examined. Included in this expense should be the time of the public health nurses of the State Department of Health utilized for screening in each district. For the 1968 Head Start physical examination program, the CAP contract, awarded to Children's Hospital, involves not only allotment of funds for physicians' time but also the employment of two full-time nurses and a coordinator. Because a large part of the nurses' time is to be spent in follow-up cases, one-fourth of the time of each nurse was regarded as feasible for screening. A fourth of the coordinator's time was also included. Table 8 presents the estimated costs for the respective projects. Costs for follow-up psychological tests, done by the psychologist and the graduate assistant, were not included inasmuch as follow-up costs are not involved in the psychological evaluation on the comparison project. The cost for supplies and transportation funds are also omitted from both projects. Other costs related to the conduct of this study, such as data analysis and computer time, are not relevant.

Although the results suggest that costs for pediatric examinations are higher than that of a program using aides, a more defensible analysis should be based on cost-effectiveness. Ideally, such complex factors as the dollar value of missed cases, of over-referrals, of follow-up costs, and other items would be considered. This was an analysis that the authors could

not make. Perhaps all that can be said here is that aides <u>can</u> be trained to participate in screening and <u>can</u> be utilized in areas where physician and nurse shortages are acute.

Table 8

COMPARISON OF ESTIMATES OF COSTS

UTILIZING NON-PROFESSIONAL PERSONNEL AND PHYSICIANS

	Non-Professional Personnel
Training Costs for Pediatrician and Psychologist 3 hours for 2 weeks	$ 460
-- Nurse Supervisor	2,428
-- Aides	1,091
Total	$3,979

	Medical Personnel
Pediatrician "Fee for Service" $10 per case	$2,980
Nurses ½ time	3,500
Coordinator ½ time	2,000
Total	$8,480

DISCUSSION

Results indicate that aides' referrals from health screening correlate positively with pediatricians' referrals. While over-referrals should not be of major concern so long as they do not reach sizeable numbers, a source of significant gravity would be the number of cases missed. Of the five "missed" children with suspected cardiac abnormalities, one was a known congenital cardiac case (the mother either did not know about the condition, did not understand the question, or the aide misunderstood her answer). After study three of the cases referred by a pediatrician were judged to have no evidence of organic heart disease, and one is still being followed as suspicious although no certain diagnosis has been made. Therefore, concern would be focused on only one child.

Of the other cases "missed", the follow-up findings were as follows for those children with orthopedic handicaps: Two needed special shoes, two were referred for orthopedic consultation (no treatment recommended), one referred for orthopedic consultation (did not keep appointment), one was to be observed by nurse, one no consultation was necessary (administrative decision)*, and one was already known to the orthopedic clinic. Results here suggest that important "misses" were the two cases that needed special shoes.

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*It should be noted that the recommendations for referrals by pediatricians were screened by a public health officer, and nine referrals were deemed unwarranted.

Of the children with hernia and hydrocele, one was seen in 1965 when an M. D. in an out-patient clinic indicated that consultation was not necessary for an umbilical hernia; in the 1967 CAP examination, the patient was referred for follow-up and surgery was performed. One child was referred for a hernia consultation (no further notation), one was to be followed (no treatment recommended at present), and one referred for "hernia" (a hydrocele was found by the consultant and surgery recommended). Although there was disagreement among physicians relative to diagnosis and/or treatment, two surgical cases were "missed" in the aides' screening.

Of the children suspected of having other conditions, three conditions were reported for which no follow-up was recommended, four conditions needed follow-up and treatment and one needed follow-up at adolescence. None of these appear to be crucial.

The total, then, of true misses for which treatment has been provided or was expected to be provided includes ten cases or 3.3% of the total number of cases seen. If these ten cases were regarded as the only"misses" instead of the twenty-six cases, the ¢ coefficient would be .67, with X^2 of 133.77.

Of the over-referrals, most fell in the orthopedic, weight, and ear, nose, and throat (ENT) groupings. In the screening process for orthopedic problems, the aides had been instructed not only to observe the walking behavior of the children but also to measure the width between the knees. Apparently they were over-zealous.

With regard to weight, the pediatrician-judge, in comparing the results of pediatric examinations with those of aides' screening, utilized

a standard height-weight percentile table based on repeated measurements of children by the Harvard School of Public Health staff.[15] Thus seven cases were regarded by the pediatrician-judge as overweight for the measurements obtained, using the table as a guide. Measurements, however, should not necessarily be regarded as inaccurate, since they were randomly checked. The discrepancy arose from the fact that the pediatrician in the study used a standard which was not necessarily used by the pediatricians who examined the children.

Of the six ENT over-referrals, most were cases of drainage in the ear canal, which may have been evident at the time aides examined the children but no longer evident during pediatricians' examinations. Based on the figure of 34 cases, it appears that 11% were over-referrals.

Results compare fairly favorably with those reported by Knobloch and Pasamanick[12] in a study involving medical students who used a developmental screening inventory for examining patients between the ages of 16 and 52 weeks. Of the 48 patients seen, none of the 20 called abnormal by experienced raters were called normal; thus no under-screening occurred. Over-screening, however, was evident in 18% of the cases.

In other comparisons, particularly related to aides' findings of children with possible developmental or intellectual immaturity whom they would refer for psychological testing, correlations were positive but low. Despite the low correlations, it appears that the DST does serve as a very rough screening device for developmental problems, while the QT, at least for our population, would be of little if any value. If, instead of the S-B, psychologists had used the Peabody or the verbal items of

the S-B, the correlations with the QT might have been somewhat higher. Pless[16] reports a correlation of .84 between the Wechsler Intelligence Scale for Children (WISC) administered by a psychologist and the QT by a physician for 50 children age six to sixteen years. However, the very wide age range for his sample as compared with ours could account for the difference.

The advantages of screening instruments for systematic observations not only for use by aides or auxiliary personnel but also for use by physicians and psychologists are advocated by the professionals themselves.[12,16] According to Korsch,[13] estimates of cognitive abilities made by physicians on the basis of experience predict test scores only "25% better than a random guess." Indeed, referral can always be made to a trained clinical psychologist, but in the interest of total patient care and reduction of costs to the patient, and because of scarcity of personnel, a quick screening device could be extremely useful.

ATTITUDES OF AIDES

This discussion would not be complete without some comment on the perception of aides' behavior and attitudes by the nurse-supervisor who was with them daily and kept a daily account of her impressions. The reactions of the aides themselves to their work experience are also significant.

Aides were initially overwhelmed with the amount of paperwork they felt they had to do, but as each task was discussed separately and demonstrated they seemed to accept the paper work as less burdensome than they had anticipated. When given instruction about how to approach families and how to make appointments by telephone, they showed considerable

assurance and felt that they would have no difficulty. They indicated that they experienced little anxiety about making contacts with people in their own socio-economic group.

Many of the aides' questions were repeated daily and seemed to suggest need for reassurance. Although they felt quite secure about approaching mothers and children, such tasks as recording information, scoring, figuring out ages of children, and measuring seemed to require the most practice and reassurance.

It was also observed that, despite their overt compliance and cooperativeness, they harbored certain fears about the "Establishment." These fears were initially expressed not to any of the study staff but to the CAP coordinator. They were primarily afraid that they would not get paid at all (this fear was reinforced because bureaucratic establishments have a way of prolonging the first pay period). They also worried they would not get paid if they found that families were not at home. They were also anxious as to whether they would be paid for periods of waiting, traveling, and non-interview time and if they would have to rush to complete assigned tasks, thus reducing the hours of work.

The CAP coordinator communicated these fears to the senior author, who then met with the aides. They were assured not only that they would be paid for all the time they were on the job, but also that they should continue to communicate with anyone they wished to regarding complaints or dissatisfaction. Subsequent complaints were made to the nurse-supervisor, with whom they increasingly felt more secure.

Another important factor high-lighted by the study was the numbers of days of work missed because of personal or family problems confronting the aides. These included minor surgery, baby-sitting difficulties, illness among family members, and court appearances for their children. While frequent absence may not be so common among professionals, it may be fairly typical for workers in lower income brackets who have to handle family problems themselves. This results in a high absence rate that may be largely unavoidable given the circumstances. Provision should be made for such situations.

An individual terminal interview was also held with each aide to obtain her impression of the experience. The aides reported that only one mother out of 298 families visited was regarded as uncooperative. Approximately 15 children were regarded as difficult, frightened, shy, or had cried excessively. Two aides reported that nothing in the work experience had been difficult or unsatisfactory. The other two stated that they had to wait too long to get paid; that they had to return to interview families because of absent mothers, and that they had to make a return trip to school to see absent children. All felt that the training period was adequate. They also felt that supervision was adequate and that their relationship with the nurse-supervisor was good. They felt she was 'okay' because she ate lunch with them and they could air complaints. At the outset they felt that they would be watched over.

With regard to satisfaction from the experience, they seemed to feel that its most valuable aspect was that they learned from using the tools, such as books and blocks, and then being able to apply this knowledge to their own children.

With regard to qualifications to do such a job, they emphasized an interest in people, patience, "willingness to lend their ears," and ability to speak the language of the people concerned. With reference to the latter, they felt that they probably could talk to mothers more easily than professionals and that they didn't hesitate to use the back door when there was no response at the front door.

When asked what educational background they thought necessary for this work, all said that a high-school diploma was not necessary but felt it was rather a "matter of competence" of individuals. However, they felt that high-school education was helpful for writing, arithmetic, and spelling.

All indicated that they would like to do such work again and that, furthermore, they now could think of other positions they could fill in their communities such as teachers' aides, nurses' aides, and community aides. All felt that the pay was adequate. One said that now that she had some experience she might ask for more money in future positions.

In discussing improvement of work conditions, they suggested more regular time schedules and steadier hours. All were interested in additional work and longer hours. They felt that preference for employment should be given those with children of school age or older, rather than those women with children below school age.

In summary, it would seem that this small sample of mothers--like most people, professional and otherwise--are interested in work, want regular hours, experience satisfaction with a job when it provides a learning experience, and think of themselves as possibly more effective than professionals in working with their own people.

SUMMARY

This study investigated the extent to which trained non-professional personnel under nursing supervision can effectively conduct health screening of Head Start children. Results of screening by non-professional workers were compared with results of the traditional pediatric examinations given each child.

Four non-professional persons selected from the indigenous population, trained by a pediatrician and a psychologist, used the following instruments to facilitate screening: parent interview and physical observation forms prepared by the authors, a revision of the Denver Developmental Screening Test, and the Ammons Quick Test.

There was a positive correlation between the results of pediatric examinations and those of aides' screening. Aides' referrals for intellectual and developmental problems also reflected a low but positive correlation with those of psychologists. The correlation between pediatricians' and psychologists' referrals was even lower, suggesting considerable under-referral of such problems by pediatricians.

The low correlations, however, are in large part attributable to the lack of comparability of tests used by aides and psychologists.

Results suggest that with little training, aides can be useful in doing health screening under supervision by a nurse, and may thus serve to assist in areas where there is an acute shortage of medical and nursing personnel.

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Patient's Name _____

Behavior Inventory

ARE YOU WORRIED ABOUT YOUR CHILD:

1. Having bad dreams? Yes___No___
   How often? Occasionally___Nightly___

2. Sleeping poorly? Yes___No___
   Does he get up at night? Yes___No___
   Sometimes___Every night___

3. Having trouble falling asleep at night? Yes___No___
   Sometimes___Every night___

4. About any other sleeping problems? Yes___No___
   What might this be? _____

5. Thumbsucking? Yes___No___
   When does he suck his thumb? _____

   How often? Occasionally___All the time___

6. Stammering or stuttering? Yes___No___
   When does he stammer or stutter? _____

7. Having any nervous habits? Yes___No___
   Nailbiting ___
   Hair twisting ___
   Tic's ___
   Other ___

8. Being high strung or easily upset? Yes___No___
   How does he show this? _____

   How often? _____

9. Being too restless? Yes___No___
   How does he show he is restless? _____

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10. Being afraid of strange grown-ups? Yes___No___
Being afraid of strange children? Yes___No___

11. Being very shy? Yes___No___
Not wanting to play with other children? _____
Hanging on to your skirt all the time? _____

12. Crying when you go away? Yes___No___
Crying very easily? Yes___No___

13. Hitting, beating, biting others? Yes___No___

14. Being too friendly with others? Yes___No___

15. Wanting too much attention? Yes___No___
How does he ask for attention? _____

16. Being stubborn? Yes___No___
How does he show this? _____

17. Being disobedient? Yes___No___
How & when does he show this? _____

18. Being punished? Yes___No___
How often do you punish him? _____

How is he punished? _____
Who else punishes him? _____

19. Telling lies? Yes___No___
How do you know this? _____

How often? _____

20. Being selfish? Yes___No___
Does this mean he never shares? _____ Only sometimes___

21. Being jealous of his brothers or sisters? Yes___No___
How do you know he's jealous? _____

22. Fighting with other children? Yes___No___
How often does this occur? Sometimes___All the time___

23. Destroying things on purpose? Yes___No___
When does he do this? _____

How often does he do this? _____

24. Having feeding problems? Yes___No___
What kind of problems? _____

25. Toilet habits? Yes___No___
Constipation? Yes___No___
Diarrhea? Yes___No___
Stool smearing? Yes___No___
No training? Yes___No___

26. Are you worried about any other behavior we have not mentioned? Yes___No___
What are they? _____

Name of Child _____ Name of Interviewer: _____

Age: Yr. _____ Mo. _____ (3 1/2 ___ 4 ___ 4 1/2 ___)

Sex: M F

Date: _____

Health Screening Schedule

1. Did your child injure himself (have an accident) in past year? Yes___No___
   Requiring a doctor's care in home, office, or outpatient clinic? Yes___No___
   Did he go to the hospital and stay at least overnight? Yes___No___

2. Has your child ever had a convulsion (seizure) (fit)? Yes___No___
   How many? _____
   Does he take pills or liquid for convulsions daily? Yes___No___

3. Does your child have worms? Yes___No___

4. Was your child in hospital during past year at least overnight? Yes___No___
   For what reason?_____

5. When did your child last go to the dentist? _____

6. Do you consider your child's speech normal? Yes___No___

7. Did your child ever have eczema? Yes___No___
   (Did your child have an itchy rash on his face, behind knees & in front elbows?) Yes___No___

8. Did your child ever have asthma? Yes___No___
   During the past year? Yes___No___

9. Did your child ever get a "shot" for asthma? Yes___No___
   Daily _____ Only when he gets asthma_____

10. Does your child take medicine for asthma? Yes___No___

11. Does your child have a rupture? Yes___No___
    At belly button? Yes___No___
    In groin? Yes___No___

12. For boys, does urine come out at end of penis? Yes___No___

13. Have you ever been told that your child has
    heart murmur? Yes___No___
    heart trouble? Yes___No___

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14. Does your child wet his bed?
    Never ___
    Nightly ___
    Weekly ___
    Monthly ___

15. Does your child snore a great deal? Yes___No___

16. Does your child always seem to have a "cold"? Yes___No___

17. Does your child usually breathe through his mouth? Yes___No___

18. Is your child under a doctor's care? Yes___No___
    Out-patient clinic ___
    Private physician ___
    For what reason? _____

19. If your child were suddenly taken very sick in the middle of the night, what would you do?

    Whom would you call? _____
    Where would you take him? _____

20. Does your child wet his pants during the day? Yes___No___
    Every day ___
    Each week ___
    Occasionally ___

21. Does your child ever soil his pants? Yes___No___
    How often? _____

22. When did your child last see a doctor? _____

    For what reason?

23. Was your child ever put in the hospital overnight or longer? Yes___No___
    At what age? 0 - 1 ___
    1 - 3 ___
    3 - present ___
    For what reason? _____

24. Does your child take any medicine every day? (Exclude vitamins) Yes___No___
    Name of medicine _____
    For what reason? _____

25. Does your child dress himself? Yes___No___

26. Does your child play with other children? Yes___No___
What kinds of games?
Hide & seek ____
Chase master ____
Play house ____
Other ____

27. Does anything worry you about your child's health? Yes___No___
Explain.

28. Do you feel your child is as healthy as other 4-year old children? Yes___No___
If no, why not? _____

Observations

1. Height (in inches without shoes) _____

2. Weight (only in panties) _____

3. Skin:
   a. Rash — Yes_____ No _____ — Where? _____
   b. Infected lesions (scabs, pustules) — Yes_____ No _____
   c. Birth marks — Yes_____ No _____ — Where? _____

4. Back: straight? Yes_____ No _____

5. Limps when walking Yes_____ No _____

6. Flat feet (when standing) Yes_____ No _____

7. Distance between ankles when knees are together_____

8. Turns feet out when walking Yes_____ No _____

9. Turns feet in when walking Yes_____ No _____

10. Hair - nits

11. Ears - drainage, cotton, pinnas

Name_____ Name of Interviewer_____

Age: Yr. _____ Mo._____

Sex:_____

Date:_____

Developmental Screening Test
4½ Year Olds

	Pass	Fail
1. Catches ball (1)		
2. Balances on one foot, 10" (3)		
3. Hops on one foot (4)		
4. Tandem walk (5)		
5. Copies + (9)		
6. Copies □ after demonstration (10)		
7. Discriminates lines (11)		
8. Man, 3 parts (12)		
9. Comprehension (13)		
Write in response:		
tired _____		
cold _____		
hungry _____		
10. Prepositions (14)		
Check if correct:		
on _____		
under _____		
in front of_____		
behind _____		
11. Analogies (15)		
Write in response:		
fire - ice _____		
mother - father _____		
horse - mouse _____		
12. Color (16)		
Check if correct:		
red _____		
blue _____		
green _____		
yellow _____		

(continued - 4½ Year Olds)	Pass	Fail
13. First and Last Name (17) _____		
14. Plurals (18)* _____ Check if correct: blocks _____ books _____ cars _____		
15. Definitions (19) _____ Write in response: ball _____ lake _____ desk _____ house _____ banana _____ curtain _____ ceiling _____ hedge _____ pavement _____ (must have 4 words correct to pass)		
16. Dress without supervision (21) _____		

* Not to be scored for 4 and 4½ Year Olds in final recording